

REMARKS

In response to the above-identified Office Action (“Action”), Applicant traverses the Examiner’s rejection to the claims and seeks reconsideration thereof. Claims 1-14 are now pending in the present application. Claims 1-6 have been withdrawn. In this response, Claims 7, 10, 11 and 14 have been amended, claim 15 has been added and no claims have been cancelled.

The instant claims are directed to a method for fabricating a magneto-optical storage medium having a sublayer, comprising steps of, forming the sublayer of an alloy containing a transition metal; forming a recording layer on which information is recorded and stored; and performing thermal treatment on the sublayer, wherein a crystalline structure of the sublayer is changed into a crystalline structure having a higher magnetic anisotropy by the step of performing the thermal treatment, so that the magnetic anisotropy energy of the sublayer is coupled to the recording layer and wherein a temperature in the step of performing thermal treatment is in a range of 300 to 600°C.

I. Claim Amendments

Applicant respectfully submits herewith amendments to Claims 7, 10, 11 and 14. Claims 7 and 11 are amended to delete the recitation “high” and instead recite the crystalline structure has a “higher magnetic anisotropy energy” when thermally treated and recite the limitation of “wherein a temperature in the step of performing thermal treatment is in a range of 300 to 600°C. Support for the amendments may be found, for example, on page 6, lines 12-19, page 11, lines 8-9 and 17, page 12, lines 1-6 and claims 10 and 14. Claims 10 and 14 are amended to delete the recitation of “another alloy layer” and instead recite “the recording layer comprises TbFeCo and the sublayer comprises FePt” and further to replace the recitation of “high” with “higher magnetic anisotropy energy” as described with respect to claims 7 and 11. Claim 15 is added and recites “wherein the recording layer comprises TbFeCo; and wherein the sublayer comprises a first layer and a second layer, at least one of the first layer and the second layer comprising Fe.” Support for the amendment may be found, for example, on page 10, lines 1-5 of the application. Since the amendments to the claims do not add new matter and are supported by the specification, Applicant respectfully requests they be entered accordingly.

II. Claim Rejections – 35 U.S.C. §112, first paragraph

In the outstanding Action, the Examiner rejects Claims 10 and 14 under 35 U.S.C. §112, second paragraph, as containing subject matter, namely a double-layered sublayer, not described in the specification. Applicant respectfully disagrees that this element is not described in the specification and directs the Examiner's attention to page 10, lines 1-5 of the application in which a multi-layered sublayer is described consisting of alternate layers of FePt and CoPt. In any event, this feature has been deleted from Claims 10 and 14 and instead recited in new claim 15. In view of the foregoing, Applicant respectfully submits Claims 10, 14 and 15 comply with the written description requirement. In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the rejection of Claims 10 and 14 under 35 U.S.C. §112, first paragraph.

III. Claim Rejections – 35 U.S.C. §112, second paragraph

In the outstanding Action, the Examiner rejects Claims 7-14 under 35 U.S.C. §112, second paragraph, as being vague and indefinite on the basis that the term "high" in the phrase "high magnetic anisotropy" is a relative term of degree and the specification does not appear to define the limits of "high magnetic anisotropy." Applicant respectfully maintains its disagreement with the Examiner's conclusion for at least the reasons discussed in the previous Response.

In order to advance prosecution of this case, however, Applicant has amended Claims 7, 10, 11 and 14 to recite "wherein a crystalline structure of the sublayer is changed into a crystalline structure having a higher magnetic anisotropy by the step of performing thermal treatment, so that the magnetic anisotropy energy of the sublayer is coupled to the recording layer."

As discussed in the previous Response, "a patentee need not define his invention with mathematical precision in order to comply with the definiteness requirement." *See In re Marosi*, 218 USPQ 289, 292 (Fed. Cir. 1983). Moreover, it is perfectly acceptable for the range covered by a claim term to be discerned from an exemplary embodiment provided within the

specification. See *Oakley, Inc. v. Sunglasses Hut International*, 65 USPQ2d 1321 (Fed. Cir. 2003). Applicant's specification provides that a high magnetic anisotropy may be achieved by forming the sublayer with alloys containing transition metals and then applying heat in an amount which is determined based on the constitutional elements of the sublayer. See Application, page 11. The magnetic anisotropy energy of the sublayer is coupled to the recording layer so the coercive force of the recording layer can be increased. See application, page 6, lines 14-16. For example, in the case of the FePt sublayer, the sublayer is subject to thermal treatment to have a phase transition from an fcc structure to an fct structure that has a big magnetic anisotropy. See application, page 6, lines 16-18. The application provides that in one embodiment heat may be applied at a temperature of 400 to 600 degrees. See application, page 11. The Application explains that the amount of heat applied causes the sublayer to have a phase transition into a crystalline structure (e.g. face centered cubic or face centered tetragonal) that has a big magnetic anisotropy. See Application, pages 11-12. In one example using the above process, a high magnetic anisotropy energy may be about 7×10^7 erg/cm³. See Application, page 12. The application provides that this energy is coupled to the adjacent recording layer so that it can increase the coercive force of the recording layer. See Application, page 12. As a result, the coercive force of the recording layer of the magneto-optical storage medium is increased to a greater degree than where the sublayer is not provided. See Application, page 12. Thus, it is clear from Applicant's specification what is meant by the limitation of a crystalline structure having a higher magnetic anisotropy."

Moreover, in a telephone conversation with Applicant's Attorney on August 9, 2006, the Examiner indicated she believed the above recited amendment would be acceptable and sufficient to overcome the rejection of the claims on this basis.

Thus, for at least the foregoing reasons, Claims 7-14 are in compliance with 35 U.S.C. §112, second paragraph. In view of the foregoing, Applicant respectfully requests withdrawal of the rejection of Claims 7-14 under 35 U.S.C. §112, second paragraph.

IV. Claim Rejections – 35 U.S.C. §102(b)

In the outstanding Action, Claims 7-9 and 11-13 are rejected under 35 U.S.C. §102(b) as being anticipated by U. S. Patent 5,863,649 issued to Hirokane et. al. ("Hirokane"). Applicant respectfully traverses the rejection for at least the following reasons.

It is axiomatic to a finding of anticipation that each and every element of the claims are taught by the references. In regard to independent Claims 7 and 11, Hirokane fails to teach or suggest at least the elements of performing thermal treatment on the sublayer, “wherein a crystalline structure of the sublayer is changed into a crystalline structure having a higher magnetic anisotropy by the step of performing the thermal treatment, so that the magnetic anisotropy energy of the sublayer is coupled to the recording layer” and “wherein a temperature in the step of performing thermal treatment is in a range of 300 to 600°C” as recited in Claims 7 and 11.

The Examiner alleges a high temperature is used to change the magnetization of the sublayer/reading-out layer in col. 4, lines 43-60, col. 7, line 67-col. 8, line 2, col. 10, lines 42-46 and col. 11, lines 40-44. See Action, page 4. Applicant has reviewed these portions of Hirokane and fails to discern where it is taught that a crystalline structure of the sublayer is changed into a crystalline structure having a higher magnetic anisotropy by the step of performing the thermal treatment at a temperature range of 300 to 600°C. Instead, these portions of Hirokane merely discuss the magnetization state of reading-out layer 3 when a temperature is increased. Nowhere within these portions of Hirokane is it stated that the crystalline structure of reading-out layer 3 has a higher magnetic anisotropy when exposed to a thermal treatment temperature range of 300 to 600°C. Certainly, where a specific range of 300 to 600°C is recited in the claims, a teaching of a “rising temperature” does not disclose the claimed range “with sufficient specificity to constitute anticipation under the statute.” See MPEP 2131.03(II). Moreover, even where a value is taught by the prior art that is close to but does not overlap or touch the claimed range, as is the case here, anticipation may not be found. See MPEP 2131.03(III).

Thus, for at least the foregoing reasons, Applicant respectfully submits Hirokane fails to teach all the elements of Claims 7 and 11. Since each and every element of Claims 7 and 11 are not taught by Hirokane, anticipation may not be found. Applicant respectfully requests reconsideration and withdrawal of the rejection of Claims 7 and 11 under 35 U.S.C. §102(b).

In regard to Claims 8-9 and 12-13, these claims depend from Claims 7 and 11 respectively and incorporate the limitations thereof. Thus, for at least the reasons discussed above in regard to Claims 7 and 11, Hirokane does not anticipate these claims. Applicant respectfully requests reconsideration and withdrawal of the rejection of Claims 8-9 and 12-13 under 35 U.S.C. §102(b).

V. Claims 10, 14 and 15

In regard to Claims 10 and 14, Hirokane fails to teach at least the elements of “wherein the recording layer comprises TbFeCo and the sublayer comprises FePt; and wherein a temperature in the step of performing thermal treatment is in a range of 300 to 500°C” as recited in the claims. The Examiner stated in the Action dated 7/26/2005 that the prior art fails to teach the combination of a recording layer made of TbFeCo and sublayer made of FePt. Moreover, as previously discussed, Hirokane fails to teach the recited temperature range. Thus, Claims 10 and 14 are not anticipated by Hirokane.

In regard to Claim 15, claim 15 depends from Claim 7 and incorporates the limitations thereof. Thus, for at least the reasons discussed in regard to Claim 7, Claim 15 is not anticipated by Hirokane. Moreover, the Examiner has not pointed to and Applicant is unable to discern a portion of the reference teaching the additional elements of “wherein the recording layer comprises TbFeCo and wherein the sublayer comprises a first layer and a second layer, at least one of the layers comprising Fe” as recited in claim 15. Accordingly, for at least the foregoing reasons, Claim 15 is not anticipated by Hirokane.

CONCLUSION

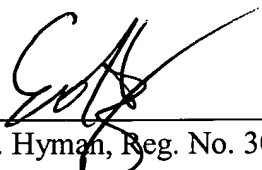
In view of the foregoing, it is believed that all claims now pending are now in condition for allowance and such action is earnestly solicited at the earliest possible date. If there are any additional fees due in connection with the filing of this response, please charge those fees to our Deposit Account No. 02-2666. Questions regarding this matter should be directed to the undersigned at (310) 207-3800.

Respectfully submitted,

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Dated: August 30, 2006

By: _____


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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on August 30, 2006

Jean Svoboda 